Shayan Chowdhury

AI, Public Health Policy, Social Entrepreneurship LinkedIn: shayanhchowdhury Website: shayan.tech Email: sc4040@columbia.edu

EDUCATION: Columbia University, NY: BA in Info & Computer Science (AI/ML Focus) **GPA: 4.00, Dean's List, Exp Grad: 2026**

Selected Coursework: Neural Networks & Deep Learning w/ Richard Zemel, High Performance Machine Learning, Advanced Machine Learning Projects, Artificial Intelligence, Natural Language Processing, LLM Foundations & Ethics, Computer Applications in Healthcare, Environmental Data Analysis, Inside the Situation Room w/ Hillary Clinton, History of the Modern Middle East w/ Rashid Khalidi

High School: Stuyvesant High School, New York, NY

RESEARCH EXPERIENCE

Research Assistant, Artificial Intelligence in Medicine Program, Harvard Medical School, Boston, MA **Jun 2024 – present**

- **Developing LLM-based AI models** for **cancer risk assessment and triage** to inform the efficiency of public health policy and healthcare systems, **advised by Dr. Danielle Bitterman** in the Radiation Oncology department
- **Leading development of a novel NLP method** to adapt existing preference optimization algorithms, enhancing the quality of synthetic medical data and improving the fine-tuning of medical AI models for optimized applicability in clinical settings
- **First authored** a **paper accepted** to **ML4Health** Findings track (colocated w/ **NeurIPS 2024**) demonstrating that open-source local **medical LLMs** fine-tuned on **synthetic patient data** outperform those trained on gold-labeled data

Undergraduate Researcher, Department of Computer Science, Columbia University, New York **Sep 2023 – Dec 2024**

- **Developed knowledge graphs** to **streamline drug discovery** by embedding pharmaceutical ontologies using NLP tools like SUSIE for entity extraction, enabling structured querying and insights for **drug development**, advised by **Prof. Venkat Venkatasubramanian**
- **Developed ML classifiers** to **identify foodborne illness** hotspots in restaurants, enhancing outbreak prediction and prevention—and collaborating with the **NYC Department of Health** to inform public health policy and community health, advised by **Prof. Luis Gravano**
- **Second authored paper** on findings presented at the **2024 International Conference on Social Media & Society** in **London, UK**

Director of Mentorship & Education, CoVisualize, Harvard University, Cambridge, MA **Oct 2022 – Sep 2024**

- **Mentoring 80+ students** on research, data analysis, AI, and technical writing + **connecting them with PIs** at Columbia, Harvard, etc.

Research Technician, Fifer Lab, Columbia University Irving Medical Center, New York **Aug 2021 – Sep 2023**

- **Developed analysis tools** to **improve access to low-cost technologies** for **preventing fetal miscarriages and stillbirths**, with a focus on **low- and middle-income countries (LMICs)** like India and South Africa and their local healthcare settings
- **Built self-supervised ML models** w/ TensorFlow for **real-time clinical analysis** of fetal + maternal electrocardiogram (ECG) data
- **Developed and published on a signal processing algorithm** to analyze fetal ECG signals for high-risk diabetes patients, resulting in **enhanced monitoring** and **early intervention** to prevent the onset of neurodevelopmental disorders in newborns *(see publications below)*

Lead Data Analyst, a2i Programme, ICT Ministry / Cabinet Division / UNDP Bangladesh **Mar 2020 – Jan 2022**

- **Appointed** to the National COVID-19 Policy Dashboard Committee of the Bangladesh Government for the **Ministries of Health and IT**
- **Led development on COVID-19 data pipelines** from syndromic surveillance via national call centers to near-real-time info from hospitals
- **Developed statistical models** to predict spread and **inform public policy** on lockdowns, public health comms and healthcare decisions
- **Analyzed data** on tests, cases, deaths, hospitalizations, and mobility, and **led presentations on policy recommendations** to the Directorate General of Health Services, Institute of Epidemiology, and **up to the Prime Minister**, alongside epidemiologists, researchers, and statisticians from Harvard, MIT, Columbia and UC Berkeley + **published several papers** on disease dynamics and response *(see below)*

Research Intern, Frank Lab: Nobel Laureate Joachim Frank, Columbia University, New York **Sep 2018 – Nov 2019**

- **Achieved the highest resolution 3D reconstruction** of the 40S eukaryotic ribosome subunit (at 1.5 Å ≈ 0.15 nanometers) to reverse engineer the mechanism of protein synthesis and uncover how errors in cell growth and division can lead to cancer
- **Fine-tuned bioinformatics tools** to increase the accuracy of protein detection and reconstruction in noisy electron microscope images

Machine Learning Project Lead, Google Mentorship Program, Google, New York **Oct 2018 – Jun 2019**

- **Led a Stuyvesant HS team** to develop a **LSTM-based ML model** w/ PyTorch capable of **understanding human emotions from voice intonations** for use in digital personal assistants, medical applications, and **improving accessibility for those with speech disabilities**

SELECTED RESEARCH PUBLICATIONS (GOOGLE SCHOLAR FOR FULL LIST)

- **S Chowdhury**, S Fang, S Muresan (2025). FACT5: A Novel [LLM] Benchmark and Pipeline for Nuanced Fact-Checking of Complex Statements. *Proceedings of the Eighth Fact Extraction and VERification Workshop* (FEVER), ACL 2025.
- **S Chowdhury**, MG Frasch, M Lucchini, LC Shuffrey, A Sania, C Malette, HJ Odendaal, MM Myers, WP Fifer, N Pini (2022). A Novel Method for the Extraction of Fetal ECG Signals from Wearable Devices. *44th Int'l IEEE* Engineering in *Medicine & Bio Conference (EMBC)*.
- AS Mahmud, **S Chowdhury**, KH Sojib, A Chowdhury, MT Quader, S Paul, MS Saidy, R Uddin, K Engø-Monsen, CO Buckee (2021). Participatory syndromic surveillance as a tool for tracking COVID-19 in Bangladesh. *Epidemics* 35, 100462.
- F Chadwick, J Clark, **S Chowdhury**, … & Sania, A. (2022). Combining Rapid Antigen Testing and Syndromic Surveillance Improves Sensitivity and Specificity of COVID-19 Detection: A Community-Based Prospective Diagnostic Study. *Nature Communications*, 13, 2877.
- Ferguson E. A., Brum, E., Chowdhury, A., **Chowdhury, S.**, Kundegorski, M., … & Hampson, K. (2022). Modelling how face masks and symptoms-based quarantine synergistically and cost-effectively reduce SARS-CoV-2 transmission in Bangladesh. *Epidemics*, 40, 100592.

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ENTREPRENEURIAL EXPERIENCE

Executive Director & Founder, Reach4Help, Montréal, Canada **March 2020 – present**

- **Leading a team of 30+** in coordinating **humanitarian aid logistics for disaster response in over 38 countries**, working closely with UN agencies, governments, and civil society organizations to ensure that aid reaches remote, vulnerable, and hard-to-access areas
- **Developed an open-source global map of aid**, serving as the backbone for logistical coordination of volunteer help for **over 10,000 organizations** through the COVID-19 pandemic worldwide, earthquakes in Mexico, wildfires in California/US West Coast, invasion of Ukraine, floods/cyclones in Bangladesh/Pakistan, earthquakes in Türkiye/Syria, etc.
- **Raised $120K** from Google for Nonprofits and **secured $106K** in in-kind donations from Google, Slack, Algolia, etc.
- **Helped raise €170K+** for medical relief and civilian defense in Ukraine + **provided aid for 58K+ households** during floods in Bangladesh, Pakistan, and India, partnering with the World Economic Forum and NGOs such as BRAC, Kandari, etc.

Global Shaper, Curator & Climate Reality Leader, World Economic Forum, Geneva, Switzerland **August 2021 – present**

- **Selected as the youngest Global Shaper** by the World Economic Forum for work on Reach4Help
- **Led SupportUkraineNow projects** as U.S. co-ambassador, reaching **1M+ Ukrainians** on refugee aid, fundraising and mental health support
- **Awarded a grant from Al Gore's Climate Reality Project** to scale **education policy solutions** with the Dhaka Hub in Bangladesh, impacting **900+ students** through climate action and education initiatives: **plastic recycling, tree planting, and hands-on workshops**
- **Elected to be Curator of the New York City Queens Hub** for global representation and local leadership, focusing on **youth education and in technology and policy** through partnerships with local NGOs and tech companies

Software Developer, Migrant Nation Foundation, The Netherlands / UNDP Bangladesh **October 2019 – June 2020**

- **Developed an e-commerce marketplace** for **11K+ Rohingya refugees** in Bangladesh, enabling them to **earn a living wage** and **achieve financial independence** by producing and selling products to consumers worldwide on Amazon, Alibaba, and other international markets
- **Lived and worked in the camps** with several United Nations agencies including UN Development Programme (UNDP), UN High Commissioner for Refugees (UNHCR), and the World Food Programme (WFP)
- **Built a mobile app to pay refugees hourly wages** in accordance with the International Labour Organization's decent work practices

HONORS & AWARDS

- NYC Queens Hub Curator, Global Shapers, World Economic Forum **2024**
- Future Climate Leader, The Aspen Institute **2023**
- Climate Reality Corp Leadership Award, awarded by fmr. U.S. Vice President Al Gore **2022**
- Dean's List (All Semesters), Columbia University **2022–**
- AP Scholar w/ Distinction, College Board **2019**
- Finalist, The Gates Scholarship **2019**
- 5 Scholarships Awarded By Columbia University: Elizabeth Piper Scholarship, Distinguished New Student Scholarship, etc. **2018–**
- Stand Up to Cancer Award for Lung Cancer Research, New York Genome Center & Weill Cornell Medical College **2017**

SPEAKING ENGAGEMENTS, EVENTS & PRESS COVERAGE

- Presenter, "FACT5: A Novel Benchmark and Pipeline for Fact-Checking" at the **8th FEVER Workshop** at **ACL 2025** in **Vienna, Austria** **Jul 2025**
- Speaker, ASU+GSV (Global Silicon Valley) Summit 2025 invited by the **Aspen Institute** in **San Diego, California** **Apr 2025**
- Curator, Global Shapers Annual Summit 2024 organized by the **World Economic Forum** in **Geneva, Switzerland** **Jul 2024**
- Guest Lecturer, What Was AI Made For at **Columbia University Double Discovery Center** Summer Academy in **New York** **Jun 2024**
- Panelist, "Bringing Health and Equity into Climate Action" organized by **Accenture** and **World Economic Forum** in **New York** **Sep 2023**
- Speaker, Princeton University's Youth Climate & Conservation Summit (YCCS) in **Princeton, New Jersey** on climate finance **Apr 2023**
- Speaker, The Aspen Institute's Future Leaders Climate Summit in **Miami, Florida** on climate public policy leadership **Mar 2023**
- Lead presenter and author, International Society for Developmental Psychobiology (ISDP) Conference in **San Diego, California** **Nov 2022**
- Presenter, "The Roadmap to Resources: How Reach4Help Leads People in Need" at **Google HQ** in **Mountain View, California** **Oct 2022**
- Speaker, International Youth Conference on entrepreneurship and public policy advocacy in **Cambridge, Massachusetts** **Sep 2022**
- Speaker, Climate Changemakers Digital Innovation for Youth Conference at the **United Nations Headquarters** in **New York** **Sep 2022**
- Lead presenter and first author, 44th Int'l IEEE Engineering in Medicine & Biology Conference **(EMBC)** in **Glasgow, Scotland** **Jul 2022**
- Exclusive feature in The Daily Star, the most widely circulated English newspaper in **Bangladesh** **Mar 2022**

PROGRAMMING LANGUAGES: Python, R, JavaScript/TypeScript, MATLAB, Java, C++, Rust, Dart, SQL

SPOKEN LANGUAGES: Bangla (native), Spanish, Latin, Mandarin Chinese (int.)